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AN EFFORT TO DETERMINE HOW SUCCESSFUL ARE SELECTIONS FOR MEMBERSHIP IN SIGMA XI

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Within the last year the writer, as secretary of the Missouri Chapter of Sigma Xi, had occasion to investigate the membership lists of the chapter from its beginning and while doing so the question occurred to him as to what extent those elected to active membership had borne the fruit which it was thought they showed promise of at the time of their selection. In order to test out his idea the writer compiled two lists, one of all those elected to active membership from the graduate students and the other all those elected from the undergraduates. These lists and the following two questions were sent to all members of the society who were charter members and all others who have been connected with the chapter for several years, with the request that they answer the two questions about all members concerning whom they had any information. Of thirty-five lists sent out, replies were received from twenty-nine, there being at least one from every department represented. It can be said, therefore, that the ground has been very thoroughly canvassed.

The two questions were (1) Engaged in scientific work at present? Yes or No?; and (2) Any papers published and if so how many? In the great majority of instances the information was given in the concise form asked for, but when such was not the case, if the writer was unable to determine definitely he did not include that individual.

The Missouri Chapter was founded in 1905. They elected to active membership from the undergraduates up to and including 1914, but ceased to do so with that year. Associate members are elected at present, but such members have not been counted in this study. The table printed at the top of the following page shows the number elected up to and including 1920:

	Undergraduates	Graduates	Total	Percent
Number elected	105	107	212	100
Deceased	6	4	10	4.5
Total living	99	103	202	95.5
No report	24	8	32	15
Considered in this study	75	95	170	85

The following table shows the number of those about whom information was available who are engaged in scientific work.

	Undergraduates	Graduates
Total considered in this study.....	75	95
Engaged in scientific work.....	56	80
Not engaged in scientific work.....	19	15
Percent engaged in scientific work.....	74.6	88.8

This table shows that 14.2% more graduates are now actively engaged in scientific work than undergraduates.

On the other hand the results as shown by publishing are strikingly reversed as the following table shows.

	Undergraduates	Graduates
Number who have published one or more papers.....	45	46
Percentage who have published one or more papers.....	80.4	57.5
Not engaged in scientific work but have published.....	4	3
Total number of publishing.....	49	49

Just what explanation can be given of these figures is a question. Altho a smaller percentage of those elected as undergraduates have gone into scientific work, those so engaged have been very energetic in publishing their results.

In this connection it is of interest to compare the graduates elected up to 1914, and the undergraduates elected during this interval.

	Undergraduates	Graduates
Elected from 1905-14.....	105	53
Engaged in scientific work.....	56	37
Number publishing.....	45	26
Percent publishing.....	80.4	70.3

The table shows that the majority of all papers by the graduate group were published by those elected during the earlier period, just as one would expect, since they have been out longer.

The undergraduate electives of the same period were more productive, 80.4% of those engaged in scientific work publishing and 70.3% of the graduates publishing. On this basis, more of the selections made from the undergraduate group have lived up to their promise than from the graduates.

In order to learn to what extent all those elected have been well selected, the following table was made.

	Undergraduates	Graduates
Percent of all elected engaged in scientific work.....	53.3	75
Percent of all elected who have published.....	47	44
Percent of all elected who have published and on whom we have reports.....	65.3	51.5

Only 53.3 percent of the undergraduates, as far as is known, have gone into scientific work and 47 percent have published. While one would expect fewer undergraduates on the average, to go into scientific work, the percentage publishing is higher than that of the graduate group, which is not to be expected and probably would not be the case as a rule. The number of graduates publishing is lower than expected.

What has been the result of all elections in both classes? The following table shows at a glance the results in the Missouri Chapter.

	Percent
Total number elected.....	212
Deceased	10
No information.....	32
Reports on	180
Number of those reported who are engaged in scientific work.....	136
Percent in scientific work of total elected.....	64.1
Number of those engaged in scientific work who have published.....	91
Number publishing of all elected.....	98

Considering all who have been elected, 64.1 percent are engaged in scientific work. Of those reported upon 75.5 percent are so engaged and 67 percent of these have published. The percent of those publishing, when all elections are considered is much less, 46 percent.

If all those about whom we have no information be counted as not being engaged in scientific work, which is probably largely the

case, but not absolutely so, the Missouri Chapter has been 64.1 per cent correct in its elections assuming that all elected would have gone into scientific work, an assumption which is probably not warranted, but with higher standards for election, this should become more generally true. Are our standards any higher at present than they were ten years ago? Personally, the writer does not believe that the standards for election have been raised in recent years, but one cannot help voicing the sentiment expressed by former President Stieglitz in a recent number of the *QUARTERLY* in regard to the selection of associate membership and, in a stronger degree, that of the active membership.

It is evident that the members who came from the undergraduates have not been the main cause for only 75 percent of those elected going into scientific work. Neither can it be said that the graduate list includes those so recently elected that as yet they have not gone into their work, because it is probably true that the character of the work of the more recent men is better known to the active membership and that they have been reported upon more fully.

Taking only known cases, it is evident that our selections have not been made with sufficient care. One wonders to what extent this is true of other chapters. Allowing for the numerous possible errors, the study points out a vital weakness in our method of election. By applying more rigidly the standards for election to associate members and causing all or a majority of our members to pass thru this class before final election, we will safeguard our standards.